BAMBOV, L.Khr.

A variant of the pulmonary artery - case of a diagnostic error. Suvrem med., Sofia no.11:123-126 '60.

1. From the District Dispensary for Tuberculosis in Burgas (Chief physician M.Karapalev)
(PULMONARY ARTERY abnorm)

BAMBOV, L. Khr.; STEFANOVA, G.; OBREIKOV, L.; AVRAMOVA, V.; KEKHAIOVA, St.; LOLOVA, V.

Exudative tuberculous pleurisy as an early manifestation of pulmonary tuberculosis. Suvrem med., Sofia no.3:79-85 '61.

1. Okruzhen tuberkulozen dispenser, Burgas (Glaven lekar M. Karapalev).

(TUBERCULOSIS PULMONARY diag)

BAMBOV, I.

On local therapy of tuberculous epididymitis. Khirurgia (Sofiia) 16 no.11:991-993 '63.

1. Okruzhen tubdispanser, gr.Burgas. Gl. lekar: St. Panaiotov.

RUSINOV, K.; MARKOV, M.; BAMBOVA-DRAGANOVA, S.; TOSHKOVA, S.

Some pharmaco-physiological studies on sweating. Izv. inst. fiziol. (Sofiia) 8:141-154 '64

BAMBUKOV, P.

"Condition and Possiblities for Development of Horticulture in Elena Okoliya."

p. 5 (Kooperativno Zemedelie, No. 6, June 1958, Sofiia, Bulgaria)

Monthly Index of East European Accession (EEAI) LC, Vol. 7, No. 11, Nov. 1958

BAMBUROV, B.G.; DEMENEV, N.V.; POLYAKOVA, V.M.

Studying the solubility in the system KF - ZrF_4 - H_2O at 20°C.
Izv. Sib. otd. Al SSSR no.5:70-75 '62.
(MIRA 18:2)

1. Ural'skiy filial AN SSSR, Sverdlovsk.

BARBUKOV, S.

On military order and discipline. Moskva. Molodaia gvardiia, 1941. 63 p. (Voennaia biblioteka komsomol'tsa) (50-49637)

S/200/62/000/004/002/002
D204/D307

AUTHORS: Bamburov, V.G., Demenev, N.V., and Polyakova, V.M.

TITLE: Investigation of the ternary system TiF_4 - KF - H_2O

PERIODICAL: Akademiya nauk SSSR. Sibirskoye otdeleniye, Izvestiya, no. 4, 1962, 73 - 80

TEXT: The above system was investigated, at 20 ± 0.1°C, since a study of the K fluorotitanates is important in the technological separation of Ti, Nb and Zr and in the processing of lanthanon ore. Water and solid KF were added to a fixed amount of aqueous TiF_4 so that the TiF_4 : KF ratio varied from 0.1 to 9 by weight, and the system was allowed to stand for 0.5 - 1 hr. The filtrate was then analyzed chemically and the solid phases by physico-chemical methods. It was found that $K_2TiF_6 \cdot H_2O$ crystallized in the cubic system from solutions containing >3 % KF and also, in irregular plates, when the TiF_4 : KF ratio was 1.55 - 2.42. Monoclinic irregular lamellas of $K_2TiF_6 \cdot 2H_2O$ were formed from solutions containing up to 3 % KF

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Investigation of the ternary system ...

and mixtures equivalent to TiF_4 - 2KF gave $2K_2TiF_6 \cdot 3H_2O$ in the form of hexagonal prisms. Increasing TiF_4 : KF to >2.5 yielded K_2TiF_6. The solubilities of $K_2TiF_6 \cdot H_2O$, $2K_2TiF_6 \cdot 3H_2O$ and $K_2TiF_6 \cdot 2H_2O$ in water at 20°C were determined as 1.19, 1.21 and 1.25 % respectively. The hydrated complexes were then heated from 20° to 720°C at a rate $\sim 8°$ per minute to determine their thermal stabilities. It was found that above 420°C the hydrates underwent hydrolysis and transformed into cubic K_2TiOF_4. There are 5 figures and 2 tables.

ASSOCIATION: UFAN SSSR (UFAS USSR)

SUBMITTED: March 15, 1961

S/828/62/000/000/011/017
E071/E135

AUTHORS: Bamburov, V.G., and Demenev, N.V.

TITLE: On the problem of separation of titanium from zirconium

SOURCE: Razdeleniye blizkikh po svoystvam redkikh metallov. Mezhvuz. konfer. po metodam razdel. blizkikh po svoyst. red. metallov. Moscow, Metallurgizdat, 1962, 124-131

TEXT: In the production of pyrochloride concentrates large quantities of rich sphenozirconic niobium-containing intermediate products are obtained, which contain over 10% zirconium dioxide, 3-5% niobium pentoxide and about 20% titanium dioxide. These products are decomposed by sintering with a fluoriding agent (K_2SiF_6+KCl) during which complex fluorides of the above elements, soluble in mineral acids, are formed. To obtain niobium pentoxide from the leaching solution, a preliminary precipitation of titanium in the form of potassium fluorotitanate was carried out in the earlier process. However, together with titanium, about 50% of the zirconium also precipitated. Moreover, the

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On the problem of separation of ...

distribution of zirconium between the solution and precipitate makes the production of zirconium with an acceptable yield difficult. In view of the above the solubilities in the systems $KF-TiF_4-H_2SO_4-HF-H_2O$ and $KF-ZrF_4-H_2SO_4-HF-H_2O$ at 20 °C and the contents of sulphuric acid of 5 wt.% and hydrofluoric acid of 1 wt.% were studied for the purpose of determining the conditions for separating titanium and zirconium from the above leaching solutions. Results: the solubility of potassium fluorotitanate in the presence of 1.5% potassium fluoride is 0.484% and that of potassium fluorozirconate is 4.460%. The ratio of the solubilities is 9.25. The optimum conditions for the separation of titanium and zirconium by precipitation from solutions of their complex fluoride salts in a mixture of hydrofluoric and sulphuric acids in the presence of potassium fluoride or a mixture of potassium chloride and hydrofluoric acid are: content of the salting out compound (KCl) 15.8 g/l ; in this case 85.7% of titanium is precipitated, while 98.5% of zirconium remains in the solution. The subsequent precipitation of zirconium is done by further addition of the salting out agent. To prevent

On the problem of separation of ... S/828/62/000/000/011/017
E071/E135

precipitation of iron together with zirconium, the addition is done at 80 °C, when iron is precipitated as $3KF \cdot FeF_3 \cdot 3H_2O$ and zirconium remains in the solution. After filtering off the iron salt, the filtrate is cooled to 18-20 °C when potassium fluorzirconate is precipitated. The method of separation was checked on the industrial solutions, obtained in the process of fluoriding pyrochloric and sphenozirconic concentrates. The extraction of titanium and zirconium amounted to 85.7 and 81.8% respectively.
There are 4 figures and 5 tables.

Card 3/3

ACCESSION NR: AT4042095 S/2768/63/000/007/0007/0011

AUTHOR: Sharova, A.K.; Polyakova, V.M.; Bamburov, V.G.; Chernyavskaya, Ye. I.

TITLE: Separation of titanium from niobium in mixed solutions of hydrofluoric and sulfuric acids

SOURCE: AN SSSR. Ural'skiy filial. Institut khimii. Trudy*, no. 7, 1963. Khimiya i tekhnologiya redkikh metallov (Chemistry and technology of rare metals), 7-11

TOPIC TAGS: niobium, titanium, niobium purification, titanium purification, silicofluoride method

ABSTRACT: The authors studied the mineral acid extraction of agglomerates obtained during enrichment of complex ores by sintering with KCl plus K_2SiF_6 or Na_2SiF_6 as well as the separation of titanium from niobium in the resulting hydrofluoric and sulfuric acid solutions. The agglomerate samples were treated at 70 and 80C with 3.5, 5.0, 7.0 and 10% H_2SO_4, 1.0, 2.0, 2.5 and 5.0% HF, and their combinations, with or without addition of KCl. Treatment for 1 hour at 80-90C with a mixture of 1% HF and 5% H_2SO_4 was found to be expedient, yielding up to 88% and 81% of the total Nb_2O_5 and TiO_2 (plus ZrO_2), respectively. Effective separa-

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ACCESSION NR: AT4042095

tion of titanium from niobium in these solutions was achieved by adding KCl to the solution (up to 40-60 g/L), cooling from 70 to 15C and allowing the precipitate to settle for 1 hr.; 94.3-95.6% of the total titanium then precipitated in the form of potassium fluorotitanate. Org. art has: 5 tables.

ASSOCIATION: Institut khimii, Ural'skiy filial AN SSSR (Chemical Institute, Ural Branch, AN SSSR)

SUBMITTED: 00 ENCL: 00

SUB CODE: IC NO REF SOV: 001 OTHER: 000

Card 2/2

BAMBUROV, V.G.; FOTIYEV, A.A.

Interaction of titanium dioxide with potassium hexafluosilicate. Izv. SO AN SSSR no.11 Ser.khim.nauk no.3:42-49 '63. (MIRA 17:3)

1. Ural'skiy filial AN SSSR, Sverdlovsk.

L 1717-66 EPF(c)/EWT(m)/EWP(b)/T/EWP(w)/EWP(t) IJP(c) JD/JG

ACCESSION NR: AP5021944 UR/0126/65/020/002/0308/0309
539.292:538.114

AUTHOR: Samokhvalov, A. A.; Bamburov, V. G.; Volkenshteyn, N. V.; Zotov, T. D.; Ivakin, A. A.; Morozov, Yu. N.; Simonova, M. I.

TITLE: Magnetic properties of Eu_3O_4

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 2, 1965, 308-309

TOPIC TAGS: magnetization, saturation magnetization, temperature dependence, Curie temperature, Weiss-Forrer method, magnetic moment, europium compound

ABSTRACT: To elucidate the magnetic properties of Eu_3O_4 the authors measured the temperature dependence of magnetization in the presence of different magnetizing fields at temperatures of upward of 1.65°K and thus determined for the first time the principal magnetic characteristics of Eu_3O_4: saturation magnetization σ_s and Curie temperature T_c. The measurements were performed with the aid of a pendulum magnetometer. The external magnetic field in the measurements reached 12,300 oe, which sufficed to bring the specimen to magnetic saturation. Through extrapolation from the set of curves $\sigma(H, T)$ to $H \to \infty$ the saturation magnetization σ_s was found

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L 1717-66

ACCESSION NR: AP5021944

to be 89.4 gauss·cm^3/g. From the same curves, using the Weiss-Forrer method of lines of equal magnetization, the authors found the Curie temperature, which proved to be 7.8°K. With its relatively large magnetic moment and low Curie point, this oxide appears a suitable means of verifying the spin-wave theory Verification of this theory showed that the linear T^2-dependence of saturation magnetization exists throughout a broad temperature range (from 1.65 to 4.6°K) (0.6 T_C). The same dependence is also observed for a number of uncompensated antiferromagnetics and for certain rare earths. Orig. art. has: 1 figure.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Metal Physics, AN SSSR)

SUBMITTED: 20Oct64 ENCL: 01 SUB CODE: IC, EM

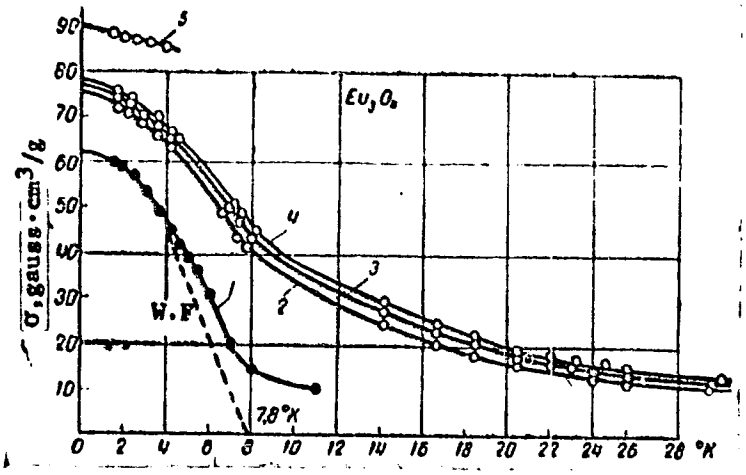
NO REF SOV: 000 OTHER: 004

Card 2/3

L 1717-66

ACCESSION NR: AP5021944

ENCLOSURE: 01



Temperature dependence of Eu_3O_4 in the presence of different fields:

1 - H = 0; 2 - H = 15,200 oe; 3 - H = 17,300 oe; 4 - H = 18,400 oe; 5 - H = ∞; broken line denotes the magnetization curve plotted by the Weiss-Forrer method

Card 3/3

SAMOKHVALOV, A.A.; BAMBUROV, V.G.; VOLKENSHTEYN, N.V.; ZOTOV, T.D.; IVAKIN, A.A.; MOROZOV, Yu.N.; SIMONOVA, M.I.

Magnetic properties of Eu_3O_4. Fiz. met. i metalloved. 20 no.2: 308-309 Ag '65.

Temperature dependence of the saturation magnetization of the ferromagnetic oxide of EuO. Ibid.:309-310 (MIRA 18:9)

1. Institut fiziki metallov AN SSSR.

L 06425-67 EWT(d)/EWT(l)/EWT(m)/EWP(w)/EWP(t)/ET... [illegible]

ACC NR: AP6026700 SOURCE CODE: UR/0181/66/008/008/2450/2454

AUTHOR: Samokhvalov, A. A.; Bamburov, V. G.; Volkenshteyn, N. V.; Zotov, T. D.; Ivakin, A. A.; Morozov, Yu. N.; Simonova, M. I. 44 B

ORG: Institute of Metal Physics, AN SSSR, Sverdlovsk (Institut fiziki metallov AN SSSR)

TITLE: Magnetic properties of EuO at low temperatures

SOURCE: Fizika tverdogo tela, v. 8, no. 8, 1966, 2450-2454

TOPIC TAGS: europium compound, spontaneous magnetization, magnetic susceptibility

ABSTRACT: EuO was prepared by the solid-state reaction $Eu_2O_3 + C \rightarrow 2EuO + CO$, and its magnetization curves were plotted for 4.2, 20.4 and 82°K. The temperature dependence of spontaneous magnetization was measured at 1.7°K and above, and was analyzed from the standpoint of the spin-wave theory. At 4.2 and 20°K, the magnetization reaches saturation in fields slightly above 4000 Oe. The paramagnetic Curie point and the effective magnetic moment, both determined from the temperature dependence of the magnetic susceptibility, were found to be 75°K and 7.3 μ_B respectively. The exchange integral I was calculated from the low-temperature range ($T < T_c/2$) and found to be equal to 0.394k. It is shown that when the term with $T^{5/2}$ is taken into account in Bloch's law, the range of applicability of Bloch's law expands, but the value of coefficient C_1 at $T^{5/2}$, determined experimentally and giving the best agreement with the experi-

Card 1/2

L 06425-67

ACC NR: AP6026700 O

mental spontaneous magnetization curve, differs markedly from the calculated value. Orig. art. has: 4 figures, 1 table and 3 formulas.

SUB CODE: 20/ SUBM DATE: 10Nov65/ ORIG REF: 002/ OTH REF: 005

Card 2/2 fdh

L 07110-67 EWI(m)/EWP(w)/EWP(t)/ETI

ACC NR: AP6029115 SOURCE CODE: UR/0048/66/030/006/0984/0989

AUTHOR: Amokhvalov, A.A.; Ivakin, A.A.; Morozov, Yu.N.; Simonova, M.I.; Bamburov, V.G.; Volkenshteyn, N.V.; Zotov, T.D.

ORG: none

TITLE: Magnetic, high frequency, and electric properties of some oxide compounds of divalent europium [Report, All-Union Conference on the Physics of Ferro- and Antiferromagnetism held 2-7 July 1965 in Sverdlovsk]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 6, 1966, 984-989

TOPIC TAGS: ferromagnetism, dielectric constant, dielectric loss, magnetization, temperature dependence, europium compound, oxide, aluminate, silicate, ELECTRIC PROPERTY, MAGNETIC PROPERTY

ABSTRACT: The authors have synthesized EuO, Eu_3O_4, $Eu_3Al_2O_6$, $EuAl_2O_4$, Eu_2SiO_4, and two series of solid solutions containing EuO and CaO, or EuO, CaO, and Eu_2O_3, and have investigated their magnetic and electric properties. The investigation was undertaken because the high magnetization of divalent europium compounds make them of interest in connection with technical applications and the simple crystal structure of EuO makes it a suitable material with which to compare the predictions of theories of ferromagnetism. The magnetization measurements were made with a Domenikali type pendulum magnetometer in fields up to 18 kOe and at temperatures down to 1.6° K. The ferro- and paramagnetic resonance of EuO was investigated at 9 and 35,7 kMHz down to 4.2°K,

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ACC NR: AP6029115

and of the other materials, at room temperature. The dc electrical properties of the materials were investigated and their ultrahigh frequency complex dielectric constants were measured with a resonant cavity technique. Some of the measurement results are presented graphically and others are discussed briefly. The saturation magnetization of EuO, extrapolated to infinite field and 0° K, was found to be 232 Gs cm^3/g. The saturation magnetization of Eu_3O_4 was approximately one-third that of EuO, indicating that the ferromagnetic properties of Eu_3O_4 are due to the divalent Eu ion. The low temperature spontaneous magnetization of EuO was a linear function of $T^{3/2}$, and not of T^2, whereas that of Eu_3O_4 and of the solid solutions containing it was a linear function of T^2, and not of $T^{3/2}$. The aluminates and silicate had a g factor (determined by paramagnetic resonance) of 2, as did EuO, and their spontaneous magnetizations followed the $T^{3/2}$ law. The ultrahigh frequency conductivity of EuO was found to be approximately 5×10^{-3} ohm^{-1} cm^{-1}, which is some six orders of magnitude higher than the dc conductivity. It is suggested that the same ultrahigh frequency dielectric loss mechanism is active in EuO as in the 3d transition metals. Other results than those listed above are presented. The authors thank S.V.Vonsovskiy for his interest and advice. Orig. art. has: 4 figures and 2 tables.

SUB CODE: 20 SUBM DATE: 00 ORIG. REF: 001 OTH REF: 006

Card 2/2 egh

BAMDAS, A. M.

USSR/Electricity - Rectifiers Jul 51

"Rectifier Circuits," Prof A. M. Bamdas, Dr Tech Sci, Moscow

"Elektrichestvo" No 7, pp 48-53

Briefly discusses 4- and 3-phase (12-tube) bridge circuits, 2-phase voltage-doubler circuit, and a combined rectifying transformer with smooth regulation. Bamdas used the described variable transformer in a high-voltage unit for testing dielectrics. Submitted 5 Apr 50.

199T22

RAMDAS, A.M., doktor tekhnicheskikh nauk, professor.

Design and construction of a powerful high-voltage mechanical rectifier. Trudy GPI 12 no.1:43-51 '56. (MLRA 10:5)
(Electric current rectifiers)

BAMDAS, A.M., doktor tekhnicheskikh nauk, professor; KUZ'MIN, A.P., inzhener.

Three-phase step-by-step rectifier circuits with currentless switching. Part 1. Step-by-step circuits with controlled valves. Trudy GPI 12 no.1:52-64 '56. (MLRA 10:5)
(Electric current rectifiers)

BAMDAS, A.M., doktor tekhnicheskikh nauk, professor; KUZ'MIN, A.P., inzhener.

Three-phase step-by-step rectifier circuits with currentless switching. Part 2. Step-by-step rectifier circuits with uncontrolled valves. Trudy GPI 12 no.1:65-71 '56. (MLRA 10:5)

(Electric current rectifiers)

Бамдас А.М.

112-3-6310

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 3, p. 177 (USSR)

AUTHOR: Bamdas, A. M., Somov, V. A.

TITLE: Voltage Regulator with Magnetic Field Regulation in Autotransformers (Stabilizator Napryazheniya s podmagnichivayemym avtotransformatorom)

PERIODICAL: Tr. Gor'kovsk. politekhn. in-ta, 1956, Vol. 12, Nr 1, pp. 72-76

ABSTRACT: A voltage regulator developed by Professor Bamdas and Engineer Somov is described. It has high efficiency and power factor (under a resistive load of about 0.95). The principle of operation is briefly described. The basic component is a specially-designed power autotransformer, in which the secondary voltage is regulated by a changing magnetic field. By automatic regulation of the magnetizing current, it is possible to obtain stable secondary voltage with a variation of ± 15% in the supply circuit voltage. A plot of output voltage versus network voltage variations and a complete diagram

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Voltage Regulator with Magnetic Field Regulation (Cont.) 112-3-6310

of the voltage regulator are included. The latter does not depend upon the ± 5 cps frequency variations of the supply circuit. The power rating of the regulator is 2.5 kva. The magnetizing and control system consumes an additional 3-4% of the rated power. A weak third harmonic is present in the regulated voltage. The regulator is designed for single-phase operation; for three-phase current it is possible to employ three regulators or two regulators connected to form an open delta.

Ts.Ye.G.

Card 2/2

ABRAMOV, V.V., kand.tekhn.nauk; AGEYEV, D.V., doktor tekhn.nauk, prof.; RAMDAS, A.M., doktor tekhn.nauk, prof.; VERKHOVSKIY, A.V., doktor tekhn.nauk, prof.; GOLINKEVICH, N.A., kand.tekhn.nauk, dots.; DERTEV, N.K., doktor tekhn.nauk, prof.; MATTES, N.V., doktor tekhn. nauk, prof.; RYZHIKOV, A.A., doktor tekhn.nauk, prof.; PASYNKOV, O.N., otv.za vypusk

[New method for calculating thermal stresses] Novyi raschetnyi metod vychisleniia termicheskikh napriazhenii. Gor'kii, 1958. 57 p. (Gorkiy.Politekhnicheskii institut. Trudy, vol.14, no.3) (MIRA 13:7)

(Thermal stresses)

RAMDAS, A.M.; KATKOV, R.N.; SHAPIRO, S.V.

Contactless cascade generator. Izv. vys. ucheb. zav.; elektromekh. 1 no.5:50-54 '58. (MIRA 11:8)
(Electric generators)

BAMDAS, Aleksandr Markovich, prof., doktor tekhn.nauk; SOMOV, Vladimir Aleksandrovich, kand.tekhn.nauk, predodavatel'; SUCHKOV, Valentin Anatol'yevich, assistent

Welding transformer with smooth voltage regulation by means of magnetic biasing of the shunt. Izv.vys.ucheb.zav.; elektromekh. 1 no.9: 62-65 '58. (MIRA 12:1)

1. Zaveduyushchiy kafedroy obshchey i teoreticheskoy elektrotekhniki i elektricheskikh mashin i apparatov Gor'kovskogo politekhnicheskogo instituta (for Bamdas). 2. Gor'kovskiy politekhnicheskiy institut (for Somov). 3. Kafedra elektricheskikh mashin Gor'kovskogo politekhnicheskogo instituta (for Suchkov).
(Electric transformers)

BAMDAS, Aleksandr Markovich, prof., doktor tekhn. nauk; SOMOV, Vladimir Aleksandrovich, kand. tekhn. nauk, prepodavatel'; SHMIDT, Aleksey Osipovich, assistent.

Certain construction variants of single-phase and three-phase transformers controlled by magnetization of shunts. Izv. vys. ucheb. zav.; elektromekh. 1 no.10:115-123 '58. (MIRA 12:1)

1.Zaveduyushchiy kafedroy obshchey i teoreticheskoy elektrotekhniki i elektricheskikh mashin i apparatov Gor'kovskogo politekhnicheskogo instituta (for Bamdas). 2.Gor'kovskiy politekhnicheskiy institut (for Somov, Shmidt).
(Electric transformers)

SOV/144-58-9-8/18

AUTHORS: Bamdas, A. M., Doctor of Technical Sciences, Professor, Head of the Chair of General and Theoretical Electrical Engineering and of Electrical Machinery and Apparatus, Somov, V. A., Candidate of Technical Sciences, Lecturer, and Suchkov, V. A., Assistant of the Chair of Electrical Machinery

TITLE: Welding Transformer with Continuous Voltage Regulation by means of Premagnetizing a Shunt (Svarochnyy transformator s plavnym regulirovaniyem napryazheniya pri pomoshchi podmagnichivaniya shunta)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, 1958, Nr 9, pp 61-65 (USSR)

ABSTRACT: In the research laboratory of the Chair of Electrical Machinery of the Gor'kiy Polytechnical Institute a new system of transformers was developed in which continuous regulation of the secondary voltage can be achieved (Ref 3). The regulation is effected by premagnetizing of a shunt of the transformer core. This method can be applied also for welding transformers. According to Solov'yev (Ref 4), operating experience with an experimental transformer embodying such

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Welding Transformer with Continuous Voltage Regulation by means of Premagnetizing a Shunt

continuous voltage regulation in an automatic butt welding machine yielded favourable results. In this paper the principle of operation and the design of such a transformer for electric contact welding is described. A sketch of the produced welding transformer is reproduced in Fig 1. The copper and steel consumption for producing such transformers is somewhat higher than for transformers with step-wise voltage regulation. The experimental specimen of such a transformer for contact welding has a rating of 3 kVA, a maximum welding current of 4000 A and for a constant load the ratio of the regulation limits of the welding current is 1:2.3, the secondary voltage during welding is 0.96 to 1.62 V, the weight 74 kg. The winding data of the transformer are entered in Table 1, p 65. The authors believe that transformers of this type will prove useful as welding transformers.

SOV/144-58-9-8/18

Welding Transformer with Continuous Voltage Regulation by means of Premagnetizing a Shunt

There are 4 figures, 1 table and 4 Soviet references.

ASSOCIATION: Kafedra obshchey i teoreticheskoy elektrotekhniki i elektricheskikh mashin i apparatov Gor'kovskogo politekhnicheskogo instituta (Chair of General and Theoretical Electrical Engineering and of Electrical Machinery and Apparatus, Gor'kiy Polytechnical Institute)

SUBMITTED: June 4, 1958

Card 3/3

SOV/144-58-10-11/17

AUTHORS: Bamdas, A.M., Doctor of Technical Sciences, Professor; Somov, V.A., Candidate of Technical Sciences, Lecturer and Shmidt, A.O., Assistant

TITLE: Some Variants of Construction of Single-Phase and Three-Phase Transformers Controlled by Submagnetisation of Shunts (Nekotoryye varianty konstruktsiy odnofaznykh i trekhfaznykh transformatorov, reguliruyemykh podmagnichivaniyem shuntov)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, 1958, Nr 10, pp 115-123 (USSR)

ABSTRACT: Many articles on single-phase transformers controlled by the submagnetisation of shunts suggest including the magnetic shunts in the secondary winding window as shown in Fig 1a and b. With this construction the secondary winding is linked with the main flux of the primary winding and the opposing flux of the shunt. Regulation is effected by altering the submagnetisation flux. With this arrangement the magnetic system is complicated and the primary is located inside the secondary, which is inconvenient when designing dry high-voltage step-down transformers. Therefore,

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Some Variants of Construction of Single-Phase and Three-Phase Transformers Controlled by Submagnetisation of Shunts

constructions have been developed in which the shunts are located in the window of the primary winding. In this case the secondary winding is linked by the resultant flux of the primary winding and the shunt. Single-phase transformers with submagnetisation shunts in the primary winding window are then considered in more detail. In all the constructions described the primary windings are outside the secondary. The construction of the transformers illustrated in Fig 2 differs from those shown in Fig 1 in that the main legs of the core carry the secondary winding instead of the primary and the external primary winding encloses the main leg and the magnetic shunt with submagnetisation winding. A number of constructions are then described in which the main and supplementary magnetic systems are separate so that the transformers have cores of normal type. The simplest form of this construction is illustrated in Fig 3 and it will be seen that two cores, one carrying the secondary winding and the other the

Some Variants of Construction of Single-Phase and Three-Phase Transformers Controlled by Submagnetisation of Shunts

submagnetisation winding are placed side by side and the primary winding is wound round the two together. Two identical transformers of this construction are needed for connection to a single phase supply, their primary and secondary windings are connected in series or in parallel and the submagnetisation windings are connected back-to-back to supress the alternating emf's induced in them. In some cases additional steps have to be taken to compensate the alternating emf in the auxiliary winding. The degree of voltage control that can be achieved with such transformers depends on a number of factors. Curves of the secondary voltage as a function of the submagnetisation current are given in Fig 4 for several values of load resistance on an experimental model of the transformer. The transformer was intended for wide range of voltage control on load and has an additional submagnetisation winding on the main core. The construction of the transformer, which is illustrated in Fig 3 is most simple and convenient for use with wound torroidal cores. A transformer with

Some Variants of Construction of Single-Phase and Three-Phase Transformers Controlled by Submagnetisation of Shunts

one main core and two submagnetisation cores is illustrated in Fig 5. The submagnetisation windings on the two cores are cross-connected so that only one transformer is required instead of two. Fig 6 illustrates a variant of the construction described in Fig 5 in which the main magnetic circuit and the two submagnetisation cores are all arranged in a single plane. A transformer with the main magnetic system of the core type and an auxiliary magnetic system with four legs is shown in Fig 7. The submagnetisation windings are cross connected in pairs and the legs of the auxiliary magnetic system are longer than that of the main system so that the submagnetisation windings can be increased in length and reduced in diameter. A transformer designed for wide range of control secondary voltage at no-load and variable load is illustrated in Fig 8. Both main and auxiliary cores have three legs. The submagnetisation winding is wound on the middle leg of its core and hardly any power frequency emf is induced in it. The choice of

Some Variants of Construction of Single-Phase and Three-Phase Transformers Controlled by Submagnetisation of Shunts

transformer construction must be decided in each individual case separately. Three-phase transformers controlled by submagnetisation of shunts are then considered. Such three-phase transformers may consist of combinations of two or three single-phase transformers with sub-magnetised shunts or specially constructed three-phase transformers. All the constructions of single-phase transformers that have been described may be used for three-phase groups. The submagnetisation circuits of the individual single-phase transformers can be fed from a common d.c. supply. Special three-phase transformers are more compact than single-phase groups and their construction is analogous with that of single-phase transformers. Three-phase transformers with magnetic shunts in the windows of the secondary windings are first considered. The simplest construction of three-phase transformer of this type is illustrated in Fig 9. In effect the magnetic system of the transformer consists of three separate cores each with three legs with a common yoke. With this construction

Some Variants of Construction of Single-Phase and Three-Phase Transformers Controlled by Submagnetisation of Shunts

a shell-type magnetic system may be used for each phase. A disadvantage of the construction is that there is cross submagnetisation of small sections of the main magnetic circuit by constant current of the shunt which somewhat increases the reactive component of the primary winding current. In the construction illustrated in Fig 10, the main magnetic circuit is a standard three leg magnetic system. Each phase of the primary winding is wound on one leg of this core and all three phases have independent magnetic shunts. The secondary windings are wound round the main legs and the legs of the magnetic shunts. With this construction the main flux is separated from the submagnetisation flux. A disadvantage is that the system is rather difficult to assemble. A design due to Engineer B.N.Solov'yev of the Gor'kiy Council of National Economy for a three-phase transformer with a magnetic system having nine cores arranged in a single plane is shown in Fig 11. Three-phase transformers with separate magnetic shunts in the

Some Variants of Construction of Single-Phase and Three-Phase Transformers Controlled by Submagnetisation of Shunts

primary winding window are then considered. A possible construction is illustrated in Fig 12, the secondary winding is wound on three legs of an ordinary three-phase core, the submagnetisation winding is wound on the inner legs of a five leg auxiliary core. Better compensation of the emf's of the fundamental and higher harmonics in the sub-magnetisation circuit is given by the three-phase construction illustrated in Fig 13, in which the submagnetisation winding is arranged on two magnetic shunts which are on two five-leg cores. A fairly simple construction is illustrated in Fig 14, in which the secondary winding is wound on an ordinary three-phase magnetic system, perpendicular to which are three single-phase two-leg cores which carry the submagnetisation windings. A further variant of this construction is illustrated in Fig 14, in which there are three pairs of single-phase cores for the shunts on

Some Variants of Construction of Single-Phase and Three-Phase Transformers Controlled by Submagnetisation of Shunts

SOV/144-58-10-11/17

which the windings are cross-connected in pairs. There are 15 figures and 5 Soviet references.

ASSOCIATION: Kafedra Obshchey i Teoreticheskoy Elektrotekhniki i Elektricheskikh Mashin i Apparatov Gor'kovskogo Politekhnicheskogo Instituta (Chair of General and Theoretical Electrical Engineering, Gor'kiy Polytechnical Institute)

SUBMITTED: 29th September 1958

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8(3)

PHASE I BOOK EXPLOITATION SOV/2467

Bamdas, Aleksandr Markovich, Vladimir Aleksandrovich Somov and Aleksey Osipovich Shmidt

Transformatory i stabilizatory, reguliruyemyye podmagnichivaniyem shuntov (Transformers and Stabilizers Controlled by Magnetizing Shunts) Moscow, Gosenergoizdat, 1959. 135 p. 12,000 copies printed.

Ed.: M. A. Boyarchenkov; Tech. Ed.: G. Ye. Larionov

PURPOSE: This booklet is intended for staff members of scientific research institutes, laboratories and design offices engaged in the development of transformers and stabilizers. It may also be useful to students of electrical engineering departments of vuzes.

COVERAGE: The authors discuss new transformers and voltage stabilizers regulated under load by means of magnetizing shunts. They explain the theory of operation and methods of design. They also present design examples and discuss automatic control circuits of stabilized transformers and autotransformers. The material is based largely on the authors' original work in the design of transformers regulated by means of magnetizing shunts.

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No personalities are mentioned. There are 67 references; 66 Soviet (including 9 translations) and 1 German.

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Transformers and Stabilizers (Cont.)

Transformers and Stabilizers (Cont.)

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JP/mg
11-10-59

BAMDAS, A.M., doktor tekhn.nauk, prof.; KULINICH, V.A., inzh.

Automatic balancing of a three-phase network feeding an active single-phase variable load. Izv.vys.ucheb.zav.; energ. 2 no.9:53-58 S '59. (MIRA 13:2)

1. Gor'kovskiy politekhnicheskiy institut imeni A.A.Zhdanova. Predstavlena kafedroy elektricheskikh mashin i teoreticheskoy elektrotekhniki.

(Electric current converters)

SOV/144-59-8-11/14

AUTHORS: Bamdas, A.M. (Doctor of Tech. Sci., Professor) and Serebryakova, Ye.N.

TITLE: A Variable Auto-transformer with Movable Power Winding

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektrotekhnika, 1959, Nr 8, pp 98-101 (USSR)

ABSTRACT: The article opens with a brief review of variable-output transformers and constant-current regulators of the movable coil type. If the input and output voltages of such devices are nearly the same, the auto-transformer connection offers advantages. However, auto-transformers with movable coils are somewhat bulky because of the need to obtain a considerable change in the secondary reactance. The laboratory of the Electrical Machines and Apparatus Faculty of the Gor'kiy Polytechnical Institute has developed a compact variable auto-transformer with a special method of connecting the movable output winding. A schematic circuit diagram of the auto-transformer is given in Fig 2; in principle it is a step-down auto-transformer with an additional movable coil in the secondary circuit. If the secondary voltage is equal to the rated primary voltage it is advisable to connect the additional winding to a tapping on the primary, at about

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A Variable Auto-transformer with Movable Power Winding

70% of the primary turns. The device may be of single or three-phase construction with cylindrical or disc windings. A normal or somewhat elongated shell-type core may be used for the single-phase regulator, as in Fig 3a. Alternatively, it may have built-up core systems as shown in Figs 3б and 3в. The Berry type of core, shown in Fig 3в, is particularly suitable for use in stabilisers, as the counter-balance can be installed internally near the centre. An experimental model of 1.4 kVA output operated satisfactorily. Curves of secondary current, power factor (primary) and efficiency are plotted in Fig 4 as functions of the primary voltage, the secondary current and the primary voltage respectively. A resistive load was used for the tests. The curves show that when the primary voltage alters by ± 20% the secondary current only varies by 1-1.5%. Fig 5 shows a graph of secondary current as a function of supply frequency, which is seen to have little effect. The empirical formulae (1) to (6) obtained for disc windings may be used to design the magnetic system of stabilisers of up to 10 kVA output intended for primary voltage variations of ± 15%. If

A Variable Auto-transformer with Movable Power Winding SOV/144-59-8-11/14

normal transformer steel is used the induction should be about 12000 gauss. Published data on the design of small transformers may be used to design the windings. There are 5 figures and 18 references, of which 9 are Soviet, 4 English, 2 German, 2 Italian and 1 Dutch.

ASSOCIATION: Kafedra obshchey i teoreticheskoy elektrotekhniki i elektricheskikh mashin i apparatov, Gor'kovskiy politekhnicheskiy institut (Chair of General and Theoretical Electrotechnology, and Electric Machines and Apparatus, Gor'kiy Polytechnical Institute)(Bamdas)
Kafedra elektricheskikh mashin, Gor'kovskiy politekhnicheskiy institut (Chair of Electrical Machines, Gor'kiy Polytechnical Institute) (Serebryakova)

SUBMITTED: May 24, 1959

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SOV/110-59-9-3/22

AUTHORS: Bamdas, A.M. (Dr.Tech.Sci.), Somov, V.A. (Cand.Tech.Sci.) and Shapiro, S.V. (Engineer)

TITLE: New High-output a.c. Starting Stabilisers

PERIODICAL: Vestnik elektropromyshlennosti,1959,Nr 9,pp 8-12 (USSR)

ABSTRACT: The Research Laboratory of the Electrical Machines Chair of the Gor'kiy Polytechnic Institute has made prototypes of a.c. starting stabilisers with outputs of 2.5 and 10 kW. These starting stabilisers are intended for use in conjunction with the filaments of large radio valves which are of much lower resistance when cold than when hot. The device consists of a transformer controlled by a pre-magnetised shunt. The arrangement of the core and coils of this transformer is illustrated diagrammatically in Fig 1. The primary winding is wound on the two main inner limbs, the d.c. control winding being on the narrow outer magnetic shunt limbs whilst the secondary winding is wound round both main and shunt limbs. The hot resistance of valve filaments is nine times greater than the cold resistance, so that the secondary is practically short-circuited on starting and the current in it is controlled by automatic regulation

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of the d.c. pre-magnetisation of the shunt limbs. A full schematic diagram of a 10-kW starting stabiliser is shown in Fig 2; it consists of the transformer already described, with suitable control arrangements. The latter comprise a measuring device, an electronic amplifier, a magnetic amplifier and a starting device. These are described in turn and their functions briefly explained. It is possible for starters of this kind to oscillate, so stability is considered and formula (3) is derived for the conditions of stability of the system. The design points that must be watched to ensure stability are briefly mentioned. Test results and characteristics of the arrangement are then given; the performance curves of Fig 3 relate to a 10-kW device. It will be seen that the secondary voltage differs from the rated value by only ± 0.5% when the primary voltage alters by ± 10%. The efficiency of the device is 89% and the power factor about 0.7. Starting characteristics of the 10-kW stabiliser are given in Fig 4 and indicate that during the starting period the secondary current does not exceed the permitted value of 750 amps. The tests also confirmed that the temperature rise of the equipment was

New High-output a.c. Starting Stabilisers

not excessive. Dimensions and weights are stated and a photograph of the 10-kW stabiliser is given in Fig 5. There are 5 figures, and 4 Soviet references.

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BAMDAS, A.M., doktor tekhn. nauk, prof.; SUCHKOV, V.A., inzh.; SHAPIRO, S.V., inzh.; SHMIDT, A.O., inzh.

New designs of transformers with shunt excitation regulation. Trudy GPI 16 no.5:34-43 '60. (MIRA 16:4)

(Electric transformers)

82919
9.3260 S/144/60/000/006/004/004
E194/E135

AUTHORS: Bamdas, A.M., (Doctor of Technical Sciences, Professor), and Shapiro, S.V., (Assistant)

TITLE: Bridge Type Static Frequency Doublers

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1960, No 6, pp 119-122

TEXT: This article describes two new types of static frequency doublers that have been developed in the Electrical Machines Laboratory of the Gor'kiy Polytechnical Institute. The first is a capacitor bridge type frequency doubler, the circuit of which is shown in Fig 2. The load is connected to the diagonals of a four arm bridge consisting of two capacitors and two chokes with auxiliary d.c. magnetisation. With this circuit arrangement fundamental frequency and odd harmonic voltages do not appear across the secondary terminals but double frequency and other even harmonics appear. The best value of capacitance C_1 for the bridge arms may be calculated from:

$$C_1 = (0.065 \div 0.08) \frac{I_2}{f_1 U_2} \cdot 10^6 \mu F, \qquad (1)$$

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Bridge Type Static Frequency Doublers

where I_2 is the nominal current in the load circuit, U_2 is the nominal output voltage, f_1 is the frequency of the supply network. The choke current

$$I = (0.6 \div 0.7)\, I_2 \quad . \tag{2}$$

The ampere turns of the auxiliary magnetization will equal

$$I_d w_d = (0.5 \div 0.6) I_2 w, \tag{3}$$

where I_d is the magnetization current, w and w_d are respectively the ampere turns in the load winding of the choke and the pre-magnetization winding. If no output transformer is used the output voltage of the frequency doubler is about a third of the input voltage. Provided no output transformer is required this device employs 10 - 20% less copper than a normal frequency doubler, the capacitors are smaller than those required with normal frequency doublers to provide power factor correction and series compensation. The second frequency doubler described is of the inductance bridge type and a schematic circuit diagram is

Bridge Type Static Frequency Doublers

given in Fig 3. It consists of four similar saturating chokes with d.c. polarisation. The chokes in opposite arms of the bridge are saturated simultaneously and those of adjacent arms are alternately saturated every half cycle. This causes double frequency voltage to appear across the bridge diagonal to which the load is connected. A shunt capacitor is connected across the primary terminals for power factor correction and a series capacitor in the load circuit to maintain the voltage on load. In the absence of an output transformer the output voltage is about two thirds the supply voltage. The relationships between the primary current I_1 and the secondary current I_2 and also the magnetization current I_d of the frequency doubler can be determined from:

$$I_1 = (1.2 \div 1.4)I_2 = (1.2 \div 1.3)I_d, \qquad (4)$$

whereby the magnitude of the series capacitance

$$C_2 = (0.08 \div 0.12)\ \frac{I_2}{f_1 U_2} \cdot 10^6 \mu F. \qquad (5)$$

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Bridge Type Static Frequency Doublers

It is calculated that a frequency doubler of this type employs 20 - 30% less copper than a normal frequency doubler. Frequency doublers of 1.5 kVA output were built in the laboratory, and Fig 4 shows a photograph of the core of a capacitor frequency doubler. It will be seen from the curve plotted in Fig 5 for a capacitor type frequency doubler that as the load current is increased to the maximum the output voltage drops by only 20%. This curve was taken with a resistive load and when the load was partially inductive the voltage drop was still less. The efficiency of the capacitor frequency doubler was about 80% and its power factor 0.8 - 0.9. An oscillogram of the output voltage is given in Fig 6 and it will be seen that it is distorted as in normal frequency doublers. Similar tests made with an inductance type frequency doubler gave a full load efficiency of 82%, power factor of 0.6, and voltage drop at full load of 19%. The inductance type should only be used in low power installations where power factor correction is not required. Design of the circuit components of the two types of frequency doubler will be the subject of separate publications.

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Bridge Type Static Frequency Doublers

There are 6 figures and 5 references: 4 Soviet and 1 English.

ASSOCIATION: Kafedra elektricheskikh mashin i apparatov, Gor'kovskiy politekhnicheskiy institut (Chair of Electric Machines and Apparatus, Gor'kiy Polytechnical Institute)

SUBMITTED: February 20, 1960

Card 5/5

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103330009-2

BAMDAS, Aleksandr Markovich, doktor tekhn.nauk, prof.; SHAPIRO, Semen Valentinovich, assistent

Three-phase two-element static frequency triplers. Izv. vys. ucheb. zav.; elektromekh. 3 no.9:80-87 '60. (MIRA 15:5)

1. Zaveduyushchiy kafedroy elektricheskikh mashin i apparatov Gor'kovskogo politekhnicheskogo instituta (for Bamdas).
2. Kafedra elektricheskikh mashin i apparatov Gor'kovskogo politekhnicheskogo instituta (for Shapiro).
(Frequency changers) (Electric transformers)

S/194/62/000/002/013/096
D230/D301

9,3240

AUTHORS: Bamdas, A. M. and Shapiro, S. V.

TITLE: Rational construction of statistical electro-magnetic frequency multipliers and their design elements

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 2, 1962, abstract 2-2-13ch (Tr. Gor'kovsk. politekhn. in-ta, 1960, 16, no. 5, 44-60)

TEXT: Results are given of the theoretical and experimental comparison of various systems of the statistical frequency multipliers made at the Gor'kiy Polytechnic Institute. A short description of certain types of frequency doublers and triplers is given. Optimum relations for the statistical frequency multipliers, at fixed current densities, are deduced. On the basis of these relations formulae are obtained for the design of triplers. Design examples for the statistical frequency doublers and triplers at powers of 1 to 1.5 kW are given. 11 figures. 6 references. [Abstracter's note: Complete translation.]

Card 1/1

RAMDAS, A.M., doktor tekhn. nauk, prof.; KULINICH, V.A., inzh.

Static converters of single-phase current to two-phase current.
Trudy GPI 16 no.5:72-78 '60. (MIRA 16:4)

(Electric current converters)
(Phase converters)

S/103/60/021/06/15/016
B012/B054

AUTHORS: Bamdas, A. M., Kulinich, V. A., Somov, V. A., Suchkov, V. A., Shapiro, S. V., Shmidt, A. O., Gu Shen-gu (Gor'kiy)

TITLE: New Electromagnetic Control Organs for Automatic Control Systems

PERIODICAL: Avtomatika i telemekhanika, 1960, Vol. 21, No. 6, pp. 907 - 917

TEXT: New transformers were designed at the Gor'kovskiy politekhnicheskiy institut im. A. A. Zhdanova (Gor'kiy Polytechnic Institute im. A. A. Zhdanov) for the construction of control organs for automatic control systems without switching contacts, mobile parts, or electronic elements (Ref., Footnote on p. 907). They are controlled by changing the premagnetization of shunts located in the secondary windings (Fig. 1). Such control organs of a capacity of 0.1 ÷ 150 kva are used in a number of plants in the USSR. A single-phase transformer of this type of 5600 kva is being developed at present. The various systems of such transformers are de-

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scribed here. The data refer to investigations carried out in 1959 but not yet published. The paper of Ref. 2 reported on previous investigations. First, the authors describe two principal constructions of single-phase transformers of this type: one for controllers with effective control, the other for control elements of various stabilizers. These constructions are shown in Figs. 2 and 3, respectively. Some of their parameters are characterized. Fig. 4 shows the circuit diagram of an automatic control of an electric drive with voltage stabilization and abrupt cutoff. As second group of these new transformers, single-phase transformers with feedback are described. The use of an external feedback (Fig. 5) reduces the intensity of the control signal without reducing the weight of the transformer. An internal feedback, however, leads to a relative reduction of the copper weight of the transformer by about 15 %. The parameters of a 1.33-kva transformer are indicated. The authors give a mathematical analysis of the operation of a transformer of the new type. It is shown that such an ideal transformer, like an ideal magnetic amplifier, is an aperiodic member of the first order with a time constant according to formula (6). Next, the authors describe their group transformer with three single-phase transformers of the type mentioned (Fig. 8). It is used for

the continuous control of a three-phase voltage with symmetric loads of the phases. The experiments showed that the characteristics of the group transformer are satisfactory. Finally, the authors describe static converters of the number of phases with a transformer of the new type mentioned (Fig. 9). The analysis shows that the stabilization of the symmetry of a multiphase system requires an adjustment of the parameters of the control organ, i.e., the converter. The curves in Fig. 10 show what relative values the inductances and capacitances of the converter branches (on conversion of a single-phase current into a three-phase current) must have at a change of the relative values of the apparent power and at different power coefficients. The parameters may be changed automatically (Ref., Footnote on p. 916) if the control organ elements are adjustable. Such elements may be saturation chokes, or new transformers of the type described. Fig. 11 shows a corresponding modification of the circuits shown in Fig. 9. There are 11 figures and 8 Soviet references.

VB

BAMDAS, Aleksandr Markovich, doktor tekhn.nauk, prof.; KOROLEV, Igor' Veniaminovich, inzh.

Selection of fundamental relationships in designing three-phase to two-phase transformers, autotransformers, and converters. Izv. vys. ucheb. zav.; elektromekh. 4 no.4:105-113 '61. (MIRA 14:7)

1. Zaveduyushchiy kafedroy elektricheskikh mashin Gor'kovskogo politekhnicheskogo institut (for Bamdas).
(Electric transformers)

BAMDAS, A.M., prof., doktor tekhn.nauk; KULINICH, V.A., inzh.

Automatic stabilization of current symmetry in a three-phase network in the presence of variable single-phase complex load. Izv.vys. ucheb.zav.; energ. 4 no.5:1-6 My '61. (MIRA 14:6)

1. Gor'kovskiy politekhnicheskiy institut imeni A.A.Zhdanova. Predstavlena kafedroy elektricheskikh mashin i apparatov.
(Electric networks)

24230
S/143/61/000/007/001/004
D053/D113

7,2540 (1020, 1331, 1462)

AUTHORS: Bamdas, A.M., Doctor of Technical Sciences, Professor; Blinov, I.V., and Shapiro, S.V., Engineers

TITLE: Static electromagnetic frequency multipliers with 4, 6, 8, and 9 multiplication factors

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Energetika, no. 7, 1961, 35-44

TEXT: The subject of this article was discussed at the All-Union Conference on Contactless Magnetic Automation Elements, which was held in Minsk on Fetruary 20, 1961. The research program on static electromagnetic frequency multipliers was conducted by the research laboratory of the electrical machinery and apparatus department at the Gor'kovskiy politekhnicheskiy institut im. A.A. Zhdanova (Gor'kiy Polytechnic Institute im. A.A. Zhdanov). The program was limited to multipliers changing the 50-cps single and three-phase industrial current into 200, 300, 400, and 450-cps single and three-phase current. A number of such multipliers with cores made from Э 310 (E310) steel were built and tested at the institute. The output voltage was controlled by varying the magnetizing current. Figure 5 shows typical output characteris-

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Static electromagnetic frequency...

tics of a sextupler (Fig. 5a) and a nonupler (Fig. 5b). The results obtained revealed that frequency multiplication by more than 4 times can be most economically obtained by means of cascade multipliers, using well-known frequency doublers and triplers (Ref. 1 through Ref. 3) and a little known single-stage quadrupler. The quadrupler (Fig. 1a) consists of two magnetic circuits; each of them composed of two identical shell or rod type cores with a secondary winding W_2 and a d-c magnetizing winding W_d. The primary windings $W_{1(1)}$ and $W_{1(2)}$ are wound around each pair of the cores and interconnected to form a T-circuit. Since all the cores are magnetized with d.c. flowing through the W_d windings, a frequency equal to the quadruple of the basic frequency appears at the multiplier output. The active cross-sectional area of the main core is given by the formula:

$$Q_c = (3.8 \div 5.0) \cdot \sqrt{\frac{P_2}{kf}} \quad [cm^2]; \qquad (1)$$

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Static electromagnetic frequency...

where P_2 is the quadrupler output in VA; f is the frequency of the supply network; and k is a factor equal to 1 for a three-leg core and equal to 2 for a pi-shaped core. The core height is

$$h = (2.7 \div 3.3) \cdot \sqrt{kQ_c} \quad [cm]. \qquad (2)$$

The number of turns in the primary winding of the first pair of cores is

$$W_{1(1)} = 0.1 \cdot \frac{U_1 \cdot 10^8}{fB_{1m}Q_c}; \qquad (3)$$

where U_1 is the line voltage of the supply network; and B_{1m} is the amplitude of the basic harmonic of the magnetic induction in the core. For E310 sheet steel, 0.35 mm thick, the value of B_{1m} is 17,000 ÷ 18,000 gausses.

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Static electromagnetic frequency...

The number of turns in the primary winding of the second pair of cores is

$$W_{1(2)} = 1.15W_{1(1)} \qquad (4)$$

The number of turns in the secondary windings:

$$W_2 = (1.0 \div 1.3)\frac{U_2}{U_1}W_1 \, . \qquad (5)$$

The number of turns in the magnetizing winding is

$$W_d = (1.0 \div 1.3)W_2 \cdot \frac{I_2}{I_d} \, ; \qquad (6)$$

where I_2 is the rated current in the secondary winding. The rated currents in the primary windings are

Static electromagnetic frequency...

$$I_{1(1)} = (1.5 \div 1.8) I_2 \frac{W_2}{W_{1(1)}}, \text{ and}$$

$$I_{1(2)} = (1.5 \div 1.8) I_2 \frac{W_2}{W_{1(2)}}. \qquad (7)$$

For preliminary calculations, the value of the capacitor C_1 can be taken as

$$C_1 = (0.04 \div 0.06) \frac{I_2}{fU_2} \cdot 10^6 \ \mu F. \qquad (8)$$

The remaining quadrupler parameters are calculated the same way as for small-power transformers (Ref. 12). Schematics of single-stage and oascade frequency multipliers are given. There are 10 figures and 12 Soviet-bloc references.

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24230
S/143/61/000/007/001/004
D053/D113

Static electromagnetic frequency...

ASSOCIATION: Gor'kovskiy politekhnicheskiy institut imeni A.A. Zhdanova (Gor'kiy Polytechnic Institute im. A.A. Zhdanov)

SUBMITTED: February 20, 1961

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Static electromagnetic frequency...

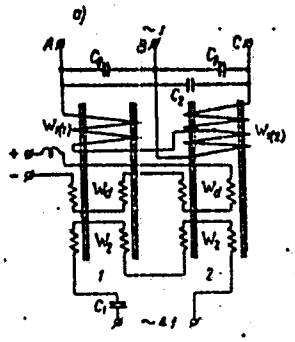

Fig. 1a
Static single-phase, single-stage frequency quadrupler

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Static electromagnetic frequency...

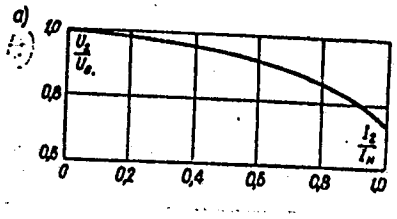

Fig. 5a
Output characteristic of the sextupler

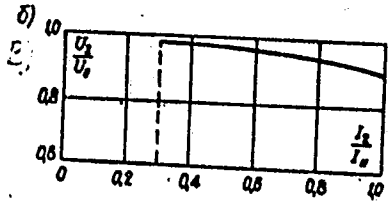

Fig. 5b
Output characteristic of the nonupler

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BAMDAS, A.M.; SAVINOVSKIY, Yu. A.

Principles for plotting series of radio filter chokes.
Standartizatsiia 25 no.6:25-28 Je '61. (MIRA 14:6)
(Radio filters)

BAMDAS, A.M., doktor tekhn.nauk; SHAPIRO, S.V., inzh.

Single-phase and three-phase voltage stabilizers with magnetized autotransformers. Vest. elektroprom. 32 no.9:45-49 S '61. (MIRA 14:8)

(Voltage regulators) (Electric transformers)

BAMDAS, A.M., doktor tekhn.nauk; SHAPIRO, S.V., inzh.

Three-phase static electromagnetic frequency quadrupler. Vest. elektroprom. 33 no.1:33-34 Ja '62. (MIRA 14:12)
(Frequency multipliers)

BAMDAS, A.M.; SAVINOVSKIY, Yu.A.; KUKOLEVA, T.V., red.; SVESHNIKOV, A.A., tekhn. red.

[Radio-equipment filter chokes] Drosseli fil'trov radioapparatury. Moskva, Sovetskoe radio, 1962. 191 p. (MIRA 15:6)
(Radio filters) (Electric filters)

BAMDAS, Aleksandr Markovich, doktor tekhn.nauk, prof.; SAVINOVSKIY, Yuriy Aleksandrovich, kand.tekhn.nauk, dotsent

Optimum geometry and calculation of the smoothing choke of a small rectifier. Izv. vys. ucheb. zav.; elektromekh. 6 no.1:103-117 '63. (MIRA 16:5)

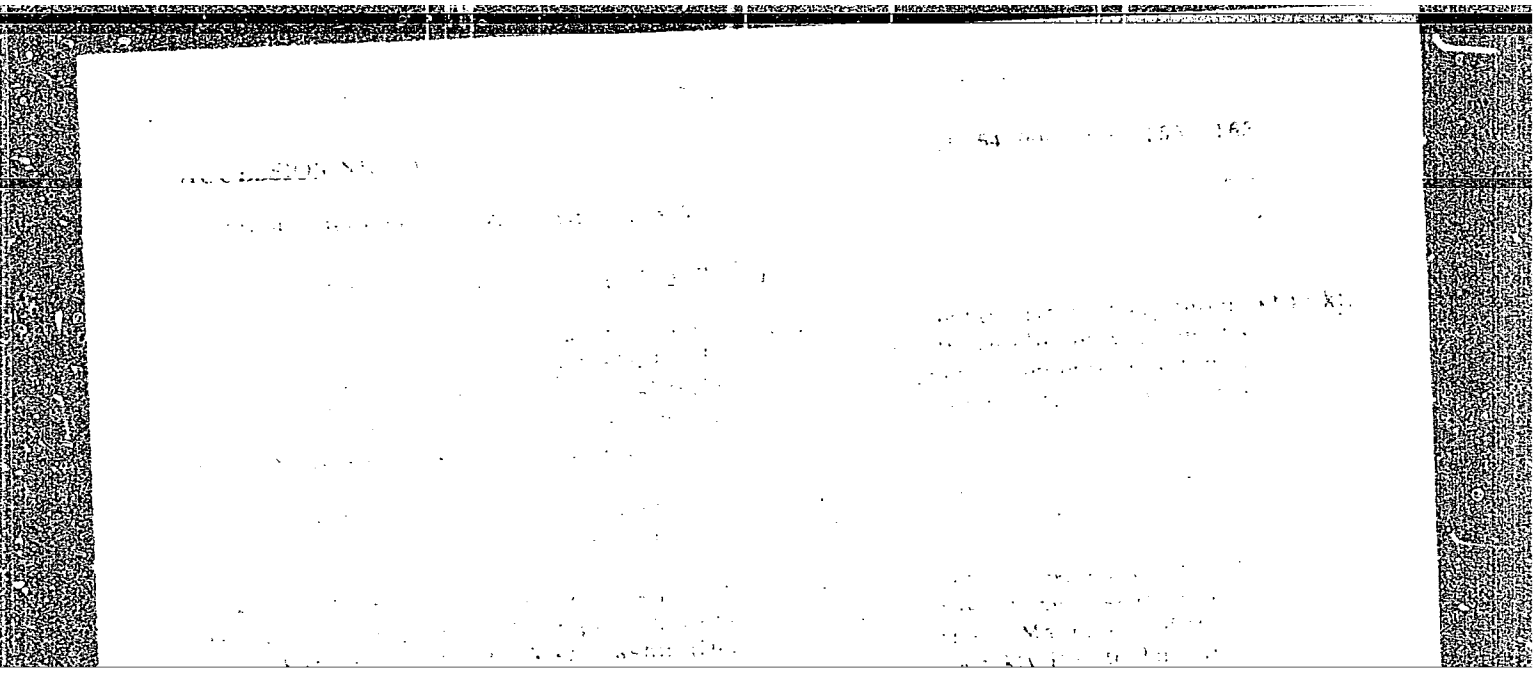
1. Zaveduyushchiy kafedroy elektricheskikh mashin i apparatov Gor'kovskogo politekhnicheskogo instituta (for Bamdas). 2. Kafedra elektricheskikh mashin i apparatov Gor'kovskogo politekhnicheskogo instituta (for Savinovskiy).
(Electric coils) (Electric current rectifiers)

BAMDAS, A.M., doktor tekhn. nauk; SHAPIRO, S.V., kand. tekhn. nauk; ZAKHAROV, N.V., inzh.; MAKHIN, Yu.I., inzh.

Two-stage ferromagnetic frequency multipliers. Vest. elektroprom. 34 no.7:67-70 Jl '63. (MIRA 16:8)

BAMDAS, A.M., doktor tekhn. nauk; SHAPIRO, S.V., kand. tekhn. nauk; GETMANENKO, O.D., inzh.

Calculation and determination of the optimal designs of bias controlled transformers and autotransformers. Trudy GPI 18 no.1:5-71 '62. (MIRA 18:7)



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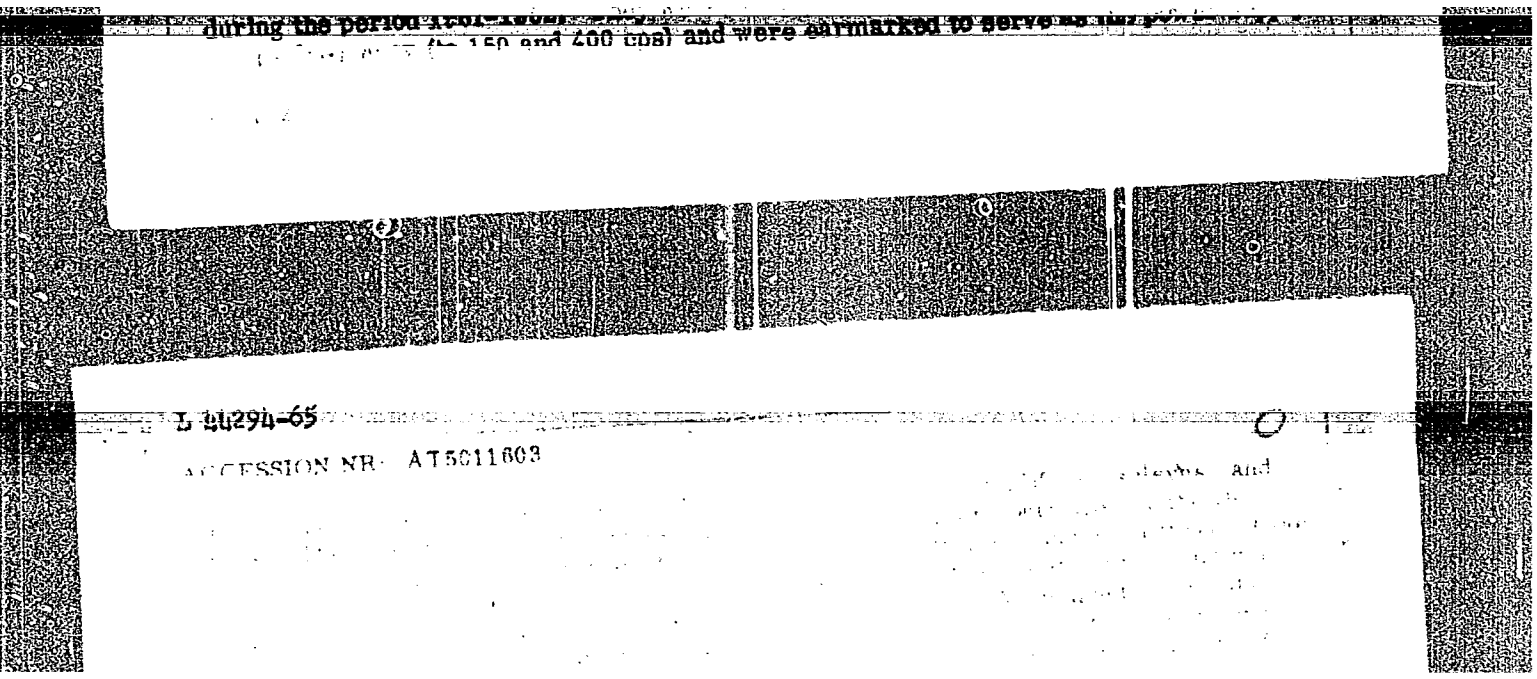


during the period from ... (Al 150 and 400 cps) and were earmarked to serve as the pol...

L 41294-65

ACCESSION NR: AT5011603

...and

bag: 19 formulas and 7 figures.

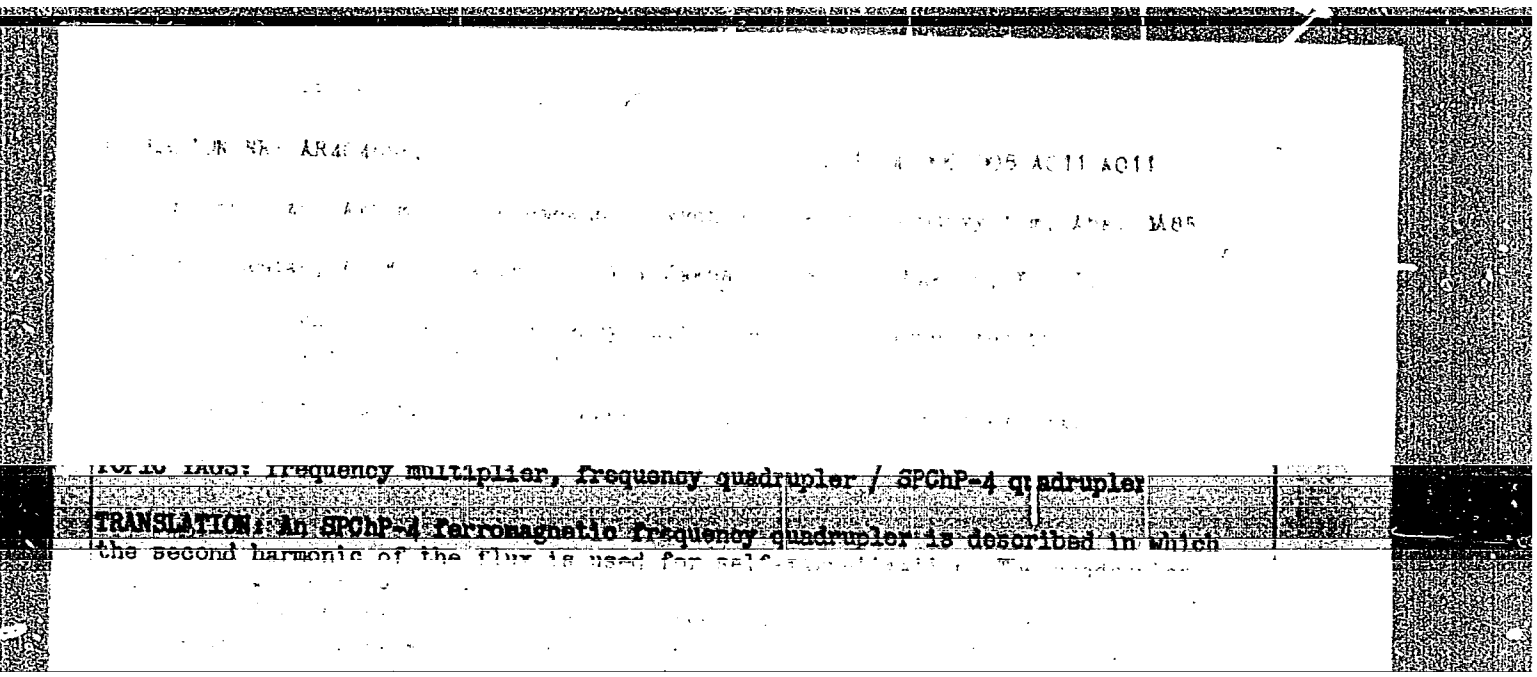
ALEKSEYEVA, G.Ye., kand. tekhn. nauk, dots.; MELESHKINA, L.P., dots., kand. tekhn. nauk; BALUYEV, V.K., inzh.; BAMDAS, A.M., prof., doktor tekhn. nauk; VENIKOV, V.A., prof., doktor tekhn. nauk; YEZHKOV, V.V., kand. tekhn. nauk; ANISIMOVA, N.D., dots., kand. tekhn. nauk; GANTMAN, S.A., kand. khim. nauk; GLAZUNOV, A.A., dots., kand. tekhn. nauk; GOGUA, L.K., inzh.; GREBENNICHENKO, V.T., inzh.; GRUDINSKIY, P.G., prof.; GORFINKEL', Ya.M., inzh.; ZVEZDIN, A.L., inzh.; KAZANOVICH, G.Ya., inzh.; KNYAZEVSKIY, B.A., dots., kand. tekhn. nauk; KOSAREV, G.V., dots., kand. tekhn. nauk; MESSERMAN, S.M., kand. tekhn. nauk, dots.; KOKHAN, N.D., inzh.; KUVAYEVA, A.P., dots., kand. tekhn.nauk; SOKOLOV, M.M., dots., kand. tekhn. nauk; LASHKOV, F.P., dots., kand. tekhn. nauk; LAZIN, A.I., inzh.; YUDIN, F.I., inzh.; [illegible], kand. tekhn. nauk; NEMIROVSKIY, P.G., inzh.; NEKRASOVA, N.M., dots., kand. tekhn. nauk; OL'SHANSKIY, N.A., dots., kand. tekhn. nauk; POLEVAYA, I.V., dots., kand. tekhn. nauk; POLEVOY, V.A., dots., kand. tekhn. nauk [deceased]; [illegible], prof., doktor tekhn. nauk; RAKOVICH, I.I.,

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103330009-2"

ALEKSEYEVA, G.Ye.--- (continued). Card 2.

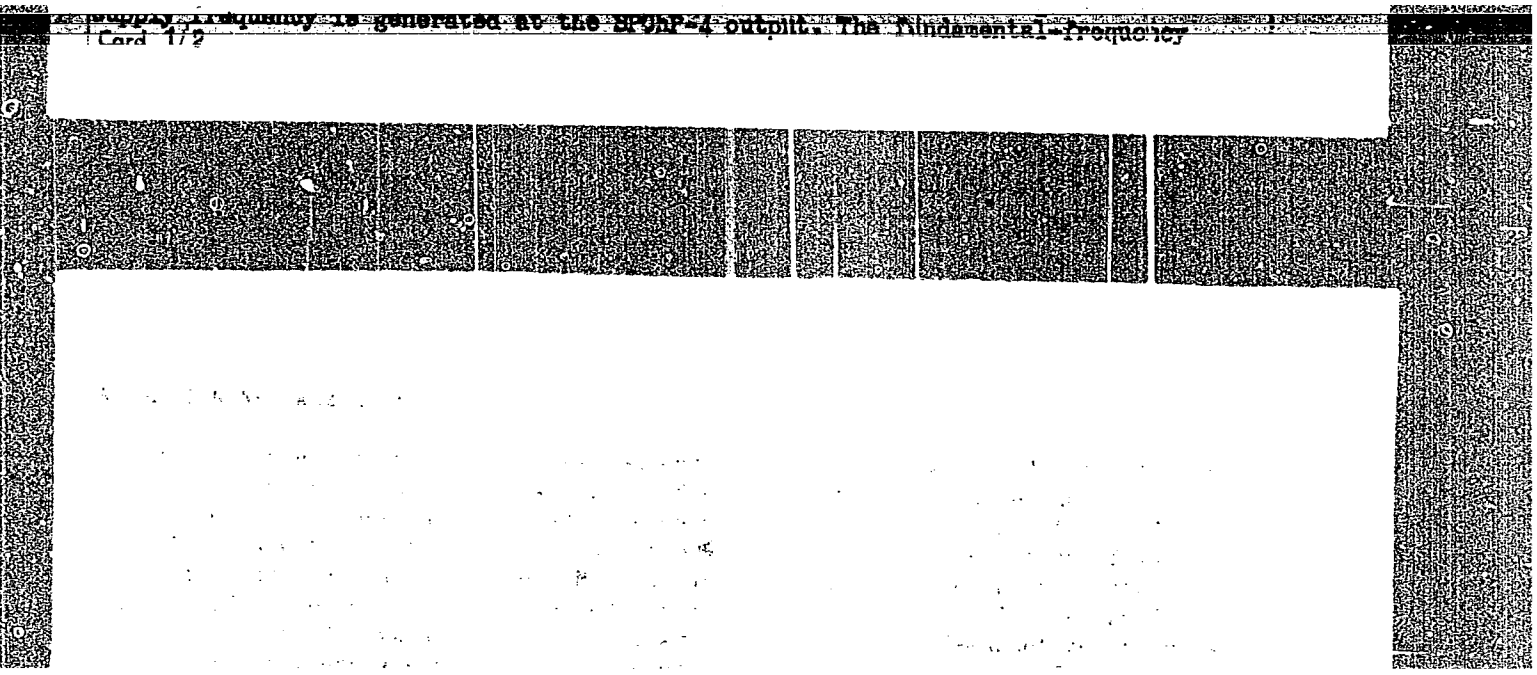
[Electrical engineering manual] Elektrotekhnicheskii spravochnik. Pod obshchei red. A.T. Golovana i dr. Moskva, Energiia. Vol.2. 1964. 758 p. (MIRA 17:12)

1. Moscow. Energeticheskiy institut. 2. Moskovskiy energeticheskiy institut (for Golovan, Grudinskiy, Petrov, Fedoseyev, Chilikin, Venikov). 3. Chlen-korrespondent AN SSR (for Petrov).



TOPIC TAGS: frequency multiplier, frequency quadrupler / SPChP-4 quadrupler

TRANSLATION: An SPChP-4 ferromagnetic frequency quadrupler is described in which the second harmonic of the flux is used for

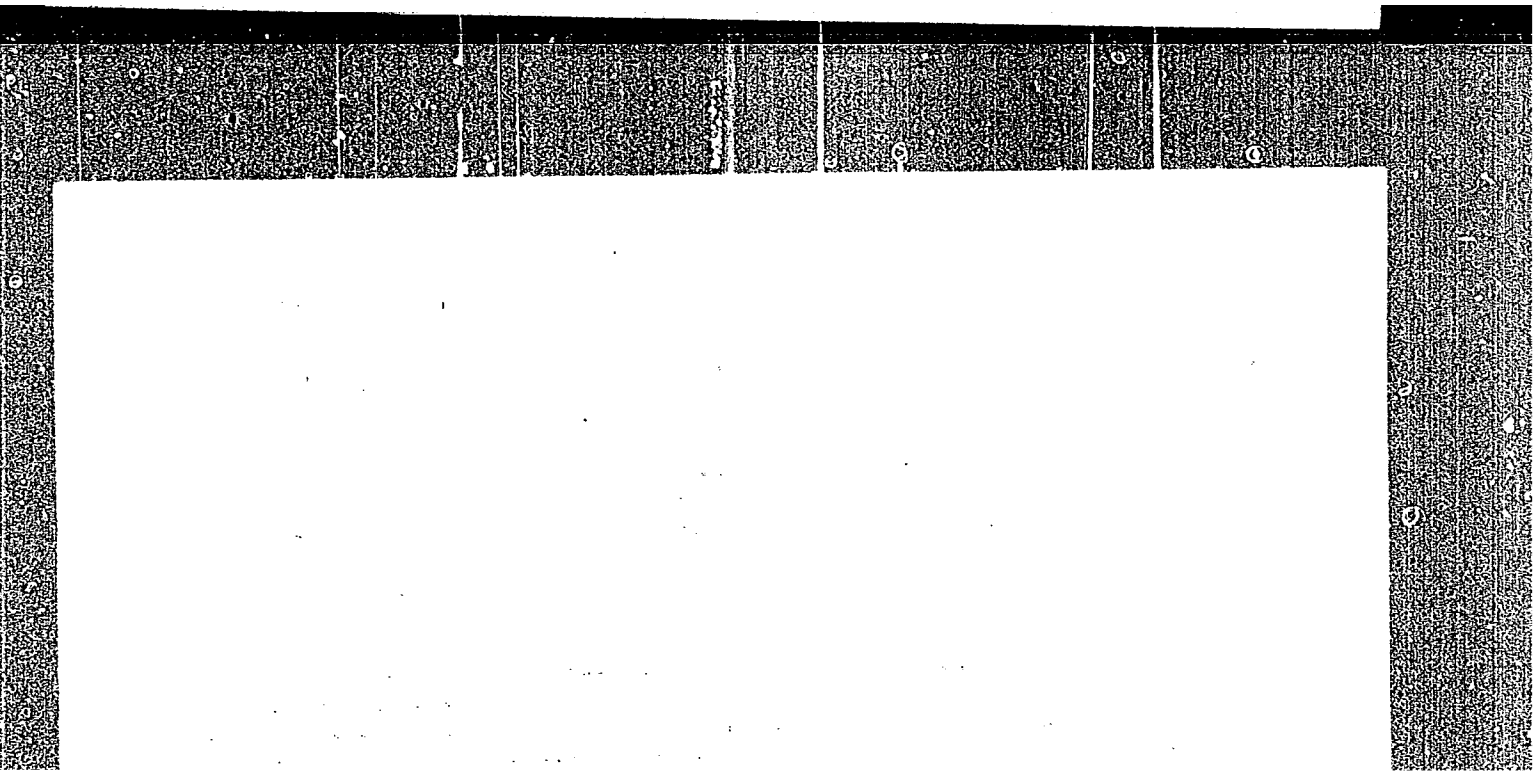


APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103330009-2"

BAMDAS, A.M., doktor tekhn.n[illegible]k; SHAPIRO, S.V., kand.tekhn.nauk; BLINOV, I.V., inzh.; ROGINSKAYA, [illegible].E., inzh.

Large static ferromagnetic frequency trippler for an electric welding systems. Trudy GPI 19 no.3:43-49 '63.

(MIRA 17:10)



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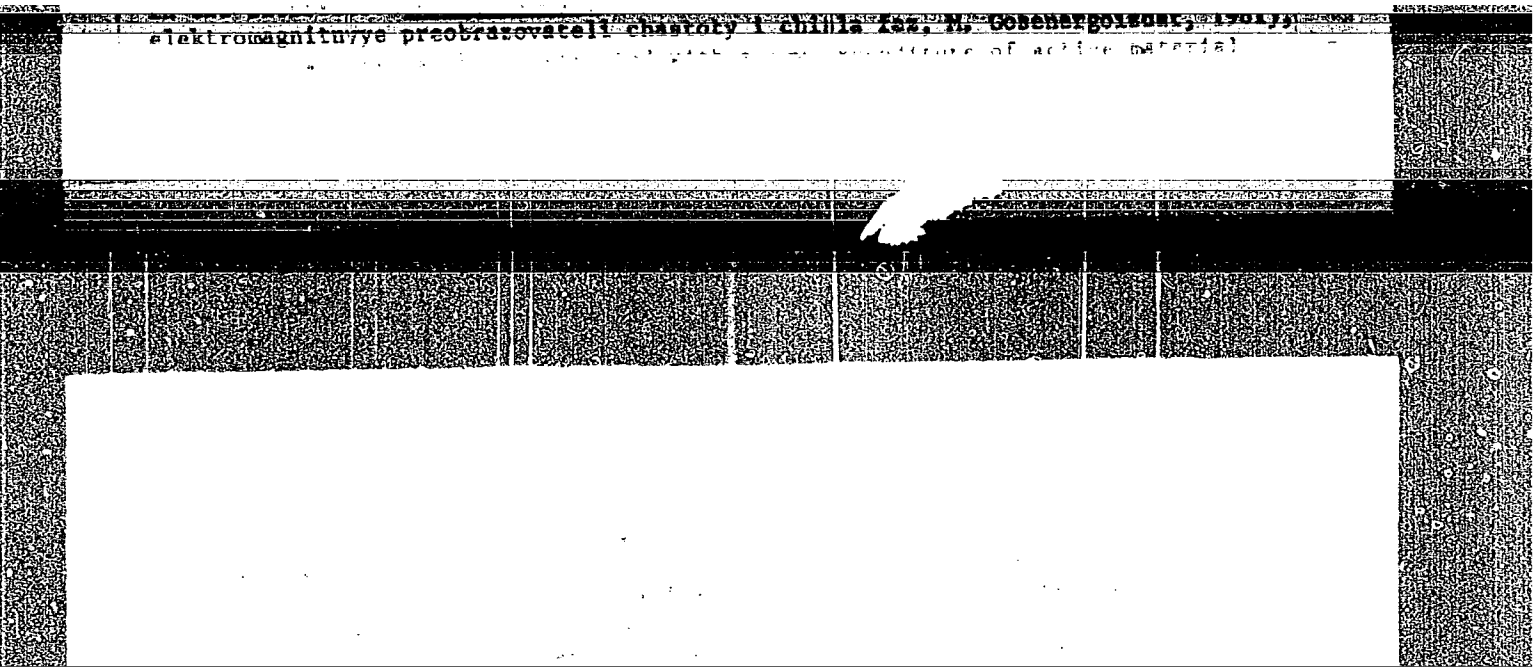
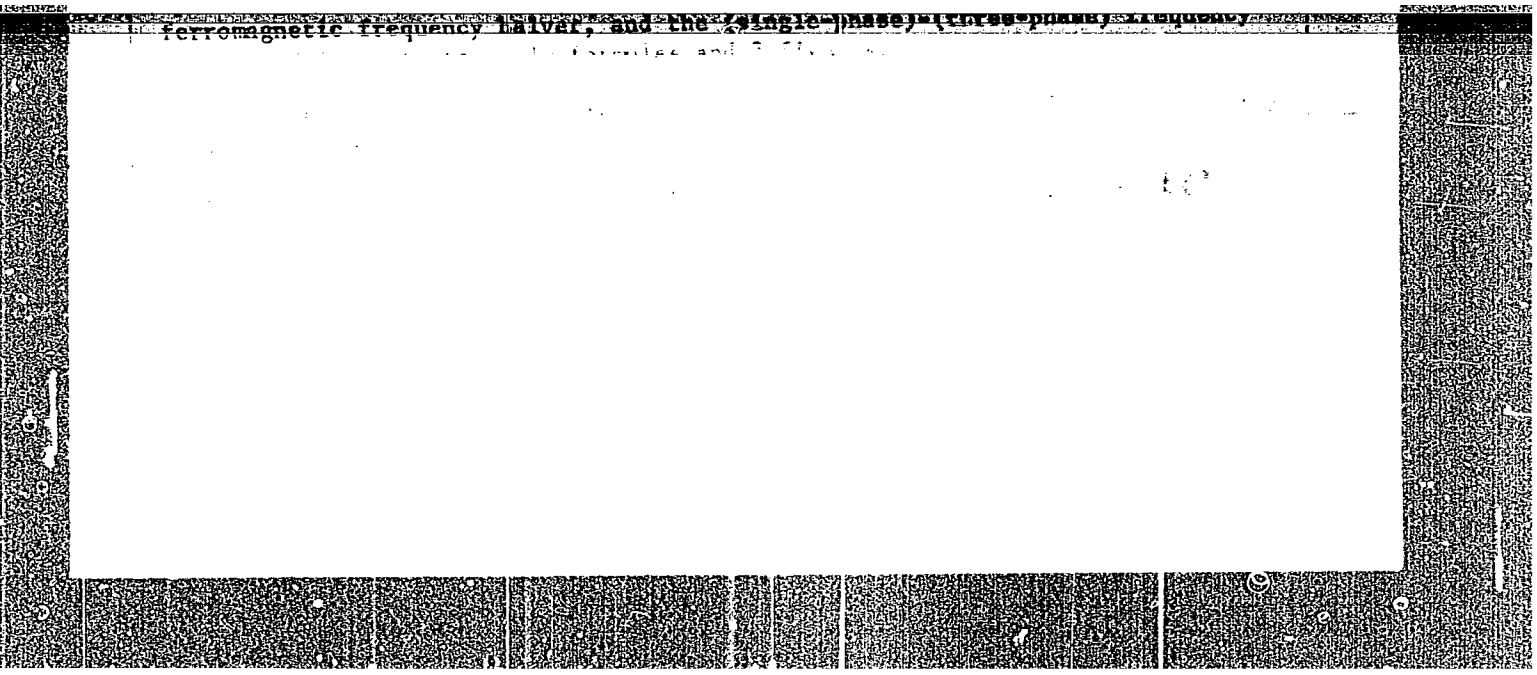


elektromagnitnyye preobrazovateli chastoty i chisla faz, M., Gosenergoizdat, 1963.



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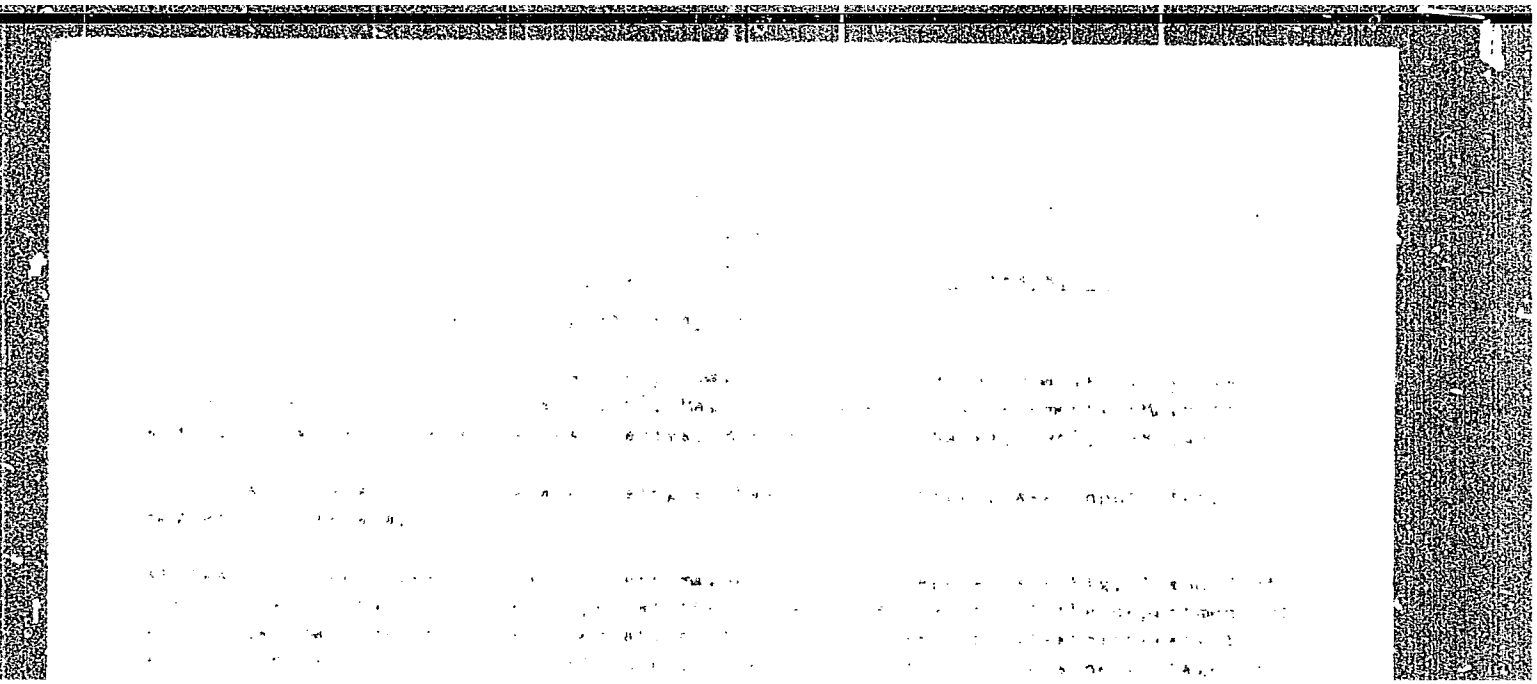

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103330009-2"

construction in considerable detail and supplies the pertinent engineering data.

BAMDAS, Aleksandr Markovich; SHAPIRO, Semen Vol'fovich;
BOYARCHENKOV, M.A., red.

[Electric transormers with bias control] Transformatory, reguliruemye podmagnichivaniem. Moskva, Energiia, 1965. 158 p. (Biblioteka po avtomatike, no.147) (MIRA 18:10)

L 22593-66
ACC NR: AP6013000

SOURCE CODE: UR/0105/65/000/006/0091/0091

AUTHOR: Bamdas, A. M.; Bol'sham, Ya. M.; Borchaninov, G. S.; Glazunov, A. A.; Zalesskiy, A. M.; Konstantinov, B. A.; Livshits, D. S.; Lychkovskiy, V. L.; Miller, G. R.; Petrov, I. I.; Pleskov, V. I.; Samover, M. L.; Syromyatnikov, I. A.; Chilikin, M. G.

ORG: none

TITLE: Professor Yu. L. Mukoseyev (on the occasion of his 60th birthday)

SOURCE: Elektrichestvo, no. 6, 1965, 91

TOPIC TAGS: scientific personnel, electric power production

ABSTRACT: Professor Yuriy Leonidovich Mukoseyev, 60, chairman of the department "Elektrosnabzheniye promyshlennykh predpriyatiy i gorodov (Electrical Supply of Industrial Enterprises and Cities)" of the Gor'kovskiy politekhnicheskiy institut (Gor'kiy Polytechnic Institute) began his studies at the Gorkiy (Nizhegorod) University. After several years at the "Krasnoye Sormovo" plant he joined in 1935 the Glavelektromontazh system where in 27 years he advanced to the position of chief engineer of the Gorkiy section of the designing institute Elektroproyekt. In 1951 he published his book "Voprosy elektrosnabzheniya promyshlennykh predpriyatiy (Problems of Electrical Supply of Industrial Enterprises)"; in 1956 at the Moskovskiy energeti-

UDC: 621.311

Card 1/2

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ACC NR: AP6013000

cheskiy institut (Moscow Power Institute) he defended his thesis "Distribution of Alternating Currents in Current Conductors". He became professor in 1960. From 1939 he has been continously the vice-president of the Gorkiy board of the Scientific-Engineering Society of Power Engineers (NTO energetikov). Recently, Yu. L. Mukoseyev participated in the work of the Uchebnometodicheskaya komissiya MV (Pedagogical-Methodological Commission of the Ministry of Armament) and of the SSO [?] USSR for the Electrical Supply of Industrial Enterprises and of Cities." Orig. art. has: 1 figure. [JPRS]

SUB CODE: 10 / SUBM DATE: none

Card 2/2